

# Surge protection device - TT-ST-2-PE/S2-24DC - 2801458

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Double-level modular terminal block with two-stage surge protection for one two-wire impedance-sensitive signal circuit, separate ground connection, nominal voltage: 24 V DC.

RoHS

6 A  
IEC

24V  
IEC

2.5 mm<sup>2</sup>

IP20

**SIL**  
evaluated  
IEC 61508

## Key Commercial Data

Packing unit	10 STK
GTIN	 4 046356 769204
GTIN	4046356769204

## Technical data

### Dimensions

Height	100 mm
Width	6.2 mm
Depth	63.5 mm (incl. DIN rail 7.5 mm)

### Ambient conditions

Ambient temperature (operation)	-40 °C ... 80 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 2000 m
Degree of protection	IP20

### General

Housing material	PA 6.6
Flammability rating according to UL 94	V-0
Color	black
Standards for clearances and creepage distances	IEC 60664-1
Mounting type	DIN rail: 35 mm
Type	Double-level terminal block

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## Technical data

### General

Number of positions	2
Direction of action	Line-Line & Line-Earth Ground

### Protective circuit

IEC test classification	C1
	C2
	C3
	D1
VDE requirement class	C1
	C2
	C3
	D1
Nominal voltage $U_N$	24 V DC
Maximum continuous voltage $U_C$	30 V DC
	21 V AC
Rated current	6 A (40 °C)
Operating effective current $I_C$ at $U_C$	$\leq 1 \mu A$
Residual current $I_{PE}$	$\leq 1 \mu A$
Nominal discharge current $I_n$ (8/20) $\mu s$ (line-line)	300 A
Nominal discharge current $I_n$ (8/20) $\mu s$ (line-earth)	5 kA
Pulse discharge current $I_{imp}$ (10/350) $\mu s$	500 A (per path)
Total discharge current $I_{total}$ (8/20) $\mu s$	5 kA
Nominal pulse current $I_{an}$ (10/1000) $\mu s$ (line-line)	25 A
Nominal pulse current $I_{an}$ (10/1000) $\mu s$ (line-earth)	50 A
Output voltage limitation at 1 kV/ $\mu s$ (line-line) spike	$\leq 45 V$
Output voltage limitation at 1 kV/ $\mu s$ (line-earth) spike	$\leq 800 V$
Output voltage limitation at (8/20) $\mu s$ (line-line)	$\leq 50 V$ (at 300 A)
Output voltage limitation at (8/20) $\mu s$ (line-earth)	$\leq 750 V$ (at 500 A)
	$\leq 1.25 kV$ (at 5 kA)
Residual voltage at $I_n$ (line-line)	$\leq 50 V$ (at 300 A)
Residual voltage at $I_n$ (line-earth)	$\leq 750 V$ (at 500 A)
	$\leq 1.25 kV$ (at 5 kA)
Residual voltage with $I_{an}$ (10/1000) $\mu s$ (line-line)	$\leq 45 V$ (at 25 A)
Residual voltage with $I_{an}$ (10/1000) $\mu s$ (line-earth)	$\leq 1.1 kV$ (at 50 A)
Voltage protection level $U_p$ (line-line)	$\leq 50 V$ (C1 - 0,6 kV / 300 A)
	$\leq 45 V$ (C3 - 25 A)
	$\leq 45 V$ (1 kV/ $\mu s$ )
Voltage protection level $U_p$ (line-earth)	$\leq 1.25 kV$ (C2 - 10 kV / 5 kA)
	$\leq 1.1 kV$ (C3 - 50 A)
	$\leq 750 V$ (C1 - 1 kV/500 A)
	$\leq 800 V$ (1 kV/ $\mu s$ )

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### Protective circuit

Response time $t_A$ (line-line)	$\leq 1$ ns
Response time $t_A$ (line-earth)	$\leq 100$ ns
Input attenuation aE, sym.	typ. 0.3 dB (330 kHz/150 $\Omega$ )
	typ. 0.3 dB (1.1 kHz / 50 $\Omega$ )
Cut-off frequency $f_g$ (3 dB), sym. in 50 Ohm system	typ. 3.3 MHz
Cut-off frequency $f_g$ (3 dB), sym. in 150 Ohm system	typ. 1 MHz
Capacity (line-line)	$\leq 2$ nF
Surge protection fault message	none
Max. required back-up fuse	6.3 A (T/IEC 60127-2/3)
Impulse durability (line-line)	C1 - 0,6 kV / 300 A
	C3 - 25 A
Impulse durability (line-earth)	C2 - 10 kV/5 kA
	D1 - 500 A
	C1 - 1 kV/500 A
	C3 - 50 A
Pulse reset time (line-earth)	$\leq 700$ ms, at $U_c$ and 10 A
Overload failure mode (line-line)	Mode 2

### Connection data

Connection method	Spring-cage connection
Connection method IN	Spring-cage
Connection method OUT	Spring-cage
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section solid	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross section AWG	24 ... 12

### Connection, equipotential bonding

Connection method	Spring-cage connection
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	4 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12

### Standards and Regulations

Standards/specifications	IEC 61643-21/A1 2008
	EN 61643-21/A1 2009

### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally friendly use period: unlimited = EFUP-e

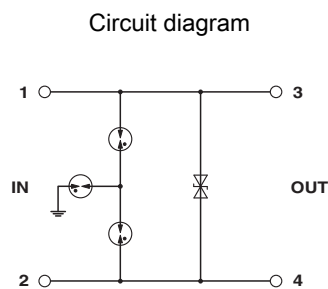
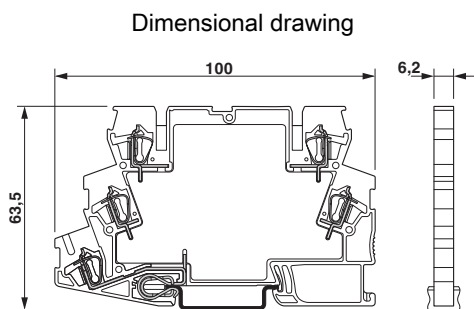
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## Technical data

### Environmental Product Compliance

	No hazardous substances above threshold values
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## Drawings



## Approvals

### Approvals

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Approvals

UL Listed / DNV GL

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Ex Approvals

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### Approval details

UL Listed		<a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a>	FILE E 138168
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DNV GL	<a href="http://exchange.dnv.com/tari/">http://exchange.dnv.com/tari/</a>	TAE00001N7
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